9/12/11

2-1: The Order of Operations

Is order important?

- English – Sign the Check vs. Check the Sign
- $3 + 5 \cdot 2 = 13$ or 16?

To avoid confusion, we follow an Order of Operations.

- Multiply and Divide first.
- Then Add and Subtract.
  - $4 + 15 \div 3 = 4 + 5 = 9$
- For operations of the same "rank," do them from left to right.
  - $2 + 5 \cdot 3 = 17$
  - $12 \div 3 – 1 = 3$
  - $10 – 1 \cdot 7 = 3$
  - $3 \cdot 5 – 8 \div 4 + 6 = 15 – 2 + 6 = 13 + 6 = 19$

Using Grouping Symbols

- Parentheses ( )
- Brackets [ ]
- Absolute Values
- Even a Fraction Bar is a grouping symbol.
  - $\frac{4+2}{3} = (4 + 2) \div 3 = 6 \div 3 = 2$

The Order of Operations:

1. Work inside grouping symbols.
2. Exponents
3. Multiply & Divide in order from left to right.
4. Add & Subtract in order from left to right.

Examples:

- $24 \div [6 – (2 \cdot 2)] = 12$
- $1 + \frac{10-2}{4} = 3$